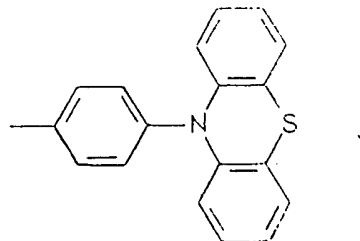
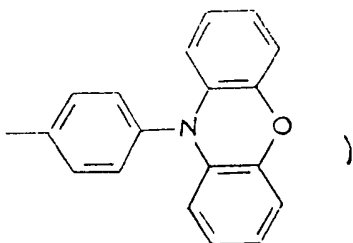
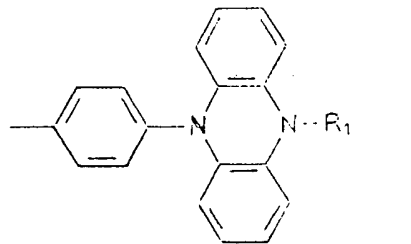
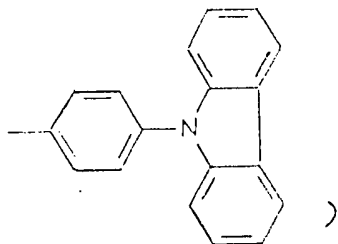
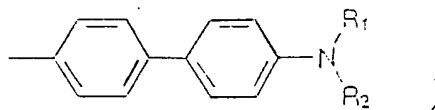
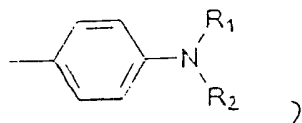
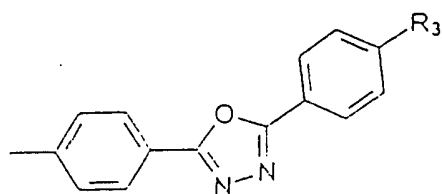


Claims

1. A polyfluorene end-capped with at least one charge-transporting moiety.
2. A polyfluorene according to claim 1, wherein the charge-transporting moiety is selected from the group comprising electron-transporting moieties, hole-transporting moieties and ion-transporting moieties.
3. A polyfluorene according to any of claims 1 - 2, wherein the charge-transporting moiety is selected from the group comprising :



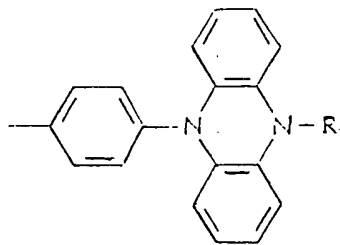
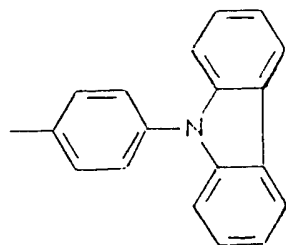
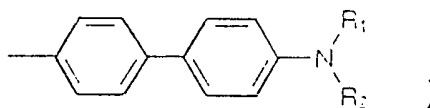
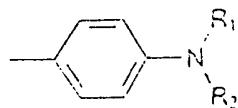
100192003-0502002

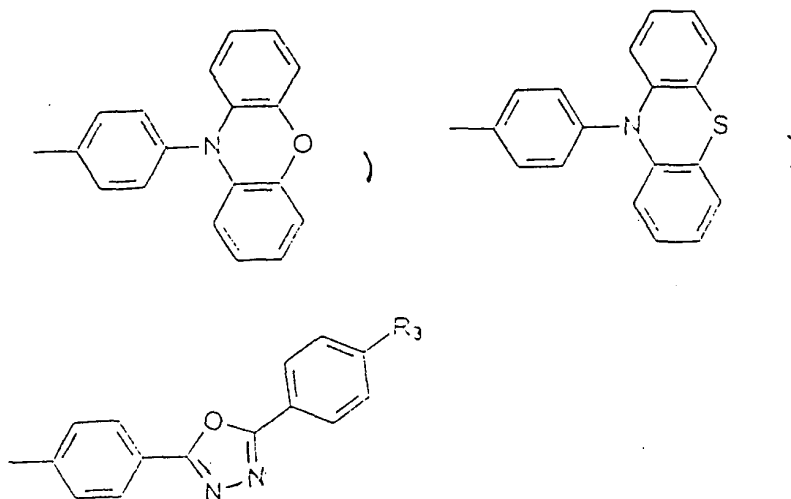


wherein R₁ and R₂ are independently at each occurrence selected from the group comprising straight chain C₁₋₂₀ alkyl, branched C₁₋₂₀ alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, alkoxyaryl, substituted alkoxyaryl, aryloxyaryl, substituted aryloxyaryl, dialkylaminoaryl, substituted dialkylaminoaryl, diarylaminoaryl and substituted diarylaminoaryl, and

wherein R₃ is independently at each occurrence selected from the group comprising straight chain C₁₋₂₀ alkyl, branched C₁₋₂₀ alkyl, aryl, substituted aryl, alkylaryl and substituted alkylaryl.

4. A polyfluorene according to claim 3, wherein R₁ and R₂ are independently at each occurrence selected from the group comprising 4-methylphenyl, 2-methylphenyl, phenyl, 1-naphthyl, 2-naphthyl, 4-methoxyphenyl, 2-methoxyphenyl, 4-dimethylaminophenyl, 2-dimethylaminophenyl, 4-diphenylaminophenyl and 4-phenoxyphenyl.
5. A polyfluorene end-capped with at least one moiety selected from the group comprising

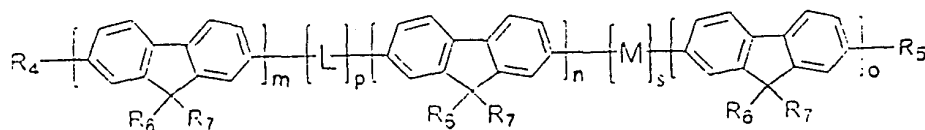




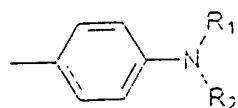
wherein R_1 and R_2 are independently at each occurrence selected from the group comprising straight chain C_{1-20} alkyl, branched C_{1-20} alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, alkoxyaryl, substituted alkoxyaryl, aryloxyaryl, substituted aryloxyaryl, dialkylaminoaryl, substituted dialkylaminoaryl, diarylaminoaryl and substituted diarylaminoaryl, and

wherein R_3 is independently at each occurrence selected from the group comprising straight chain C_{1-20} alkyl, branched C_{1-20} alkyl, aryl, substituted aryl, alkylaryl and substituted alkylaryl.

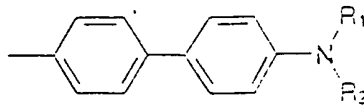
6. A polyfluorene according to claim 5, wherein R_1 and R_2 are independently at each occurrence selected from the group comprising 4-methylphenyl, 2-methylphenyl, phenyl, 1-naphthyl, 2-naphthyl, 4-methoxyphenyl, 2-methoxyphenyl, 4-dimethylaminophenyl, 2-dimethylaminophenyl, 4-diphenylaminophenyl and 4-phenoxyphenyl.
7. A polyfluorene having the formula



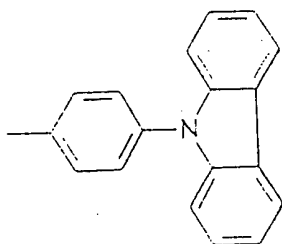
wherein R_4 and R_5 are independently at each occurrence selected from the group comprising:



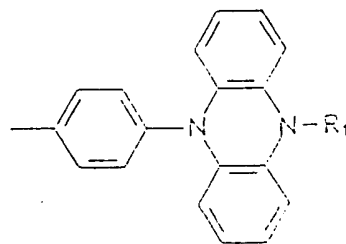
)



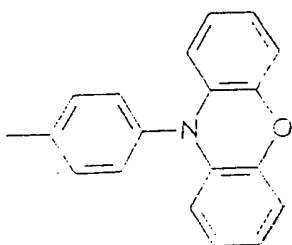
)



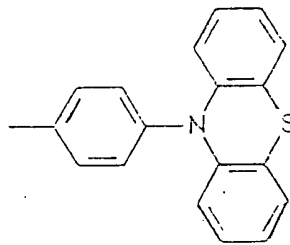
)



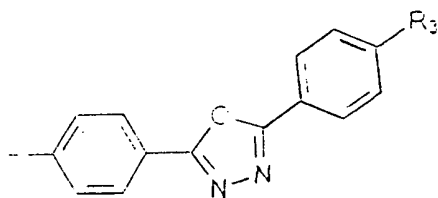
)



)



)



)

and H

10049208-050202

R_1 and R_2 being independently selected from the group comprising straight chain C_{1-20} alkyl, branched C_{1-20} alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, alkoxyaryl, substituted alkoxyaryl, aryloxyaryl, substituted aryloxyaryl, dialkylaminoaryl, substituted dialkylaminoaryl, diarylaminoaryl and substituted diarylaminoaryl,

R_3 being selected from the group comprising straight chain C_{1-20} alkyl, branched C_{1-20} alkyl, aryl, substituted aryl, alkylaryl and substituted alkylaryl,

and wherein R_6 and R_7 are independently at each occurrence selected from the group comprising straight chain C_{1-20} alkyl, branched chain C_{1-20} alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, $-(CH_2)_q-(O-CH_2-CH_2)_r-O-CH_3$,

q being selected from the range $1 \leq q \leq 10$, r being selected from the range $0 \leq r \leq 20$,

and wherein L and M are independently at each occurrence selected from the group comprising thiophene, substituted thiophene, phenyl, substituted phenyl, phenanthrene, substituted phenanthrene, anthracene, substituted anthracene, any aromatic monomer that can be synthesized as a dibromo-substituted monomer, benzothiadiazole, substituted benzothiadiazole, perylene and substituted perylene,

and wherein $m+n+o \geq 10$, each of m , n , o being independently selected from the range 1 - 1,000,

and wherein p is selected from the range 0 - 15,

and wherein s is selected from the range 0 - 15,

with the proviso that, if R_4 is H, R_5 is not H, and if R_5 is H, R_4 is not H.

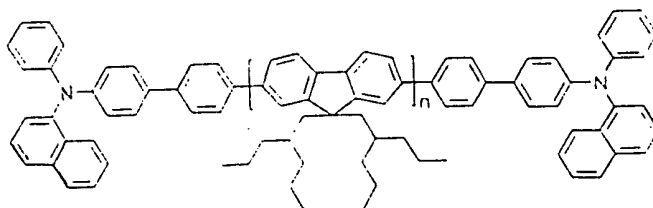
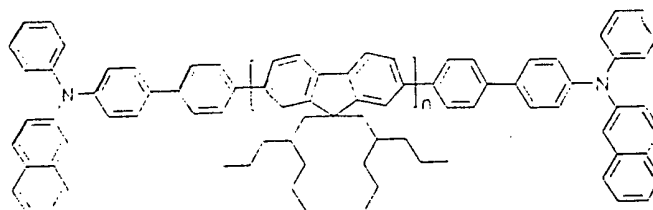
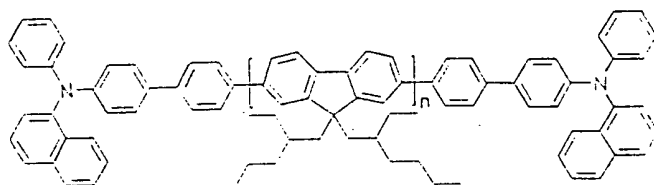
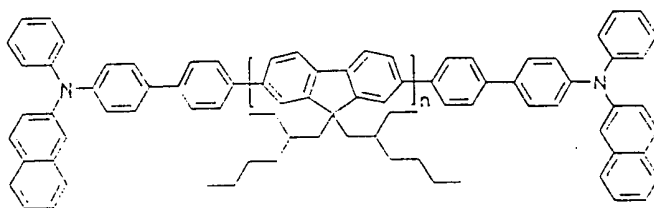
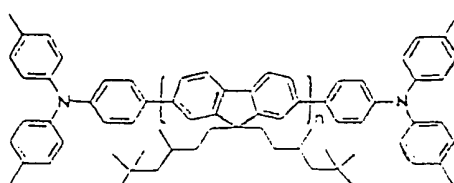
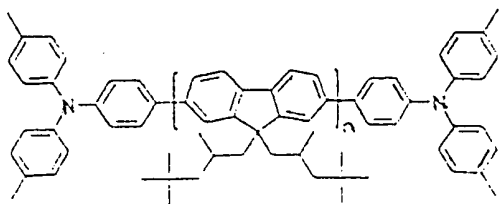
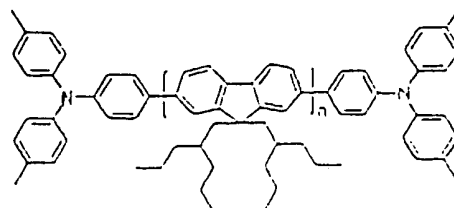
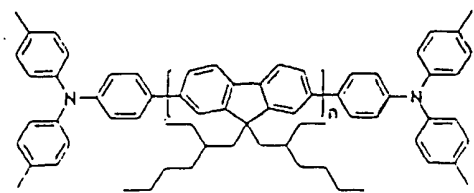
8. A polyfluorene according to claim 7,

wherein m, p, s, o are 0, and

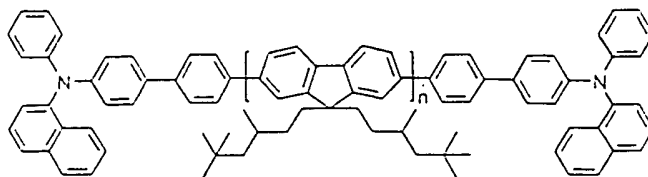
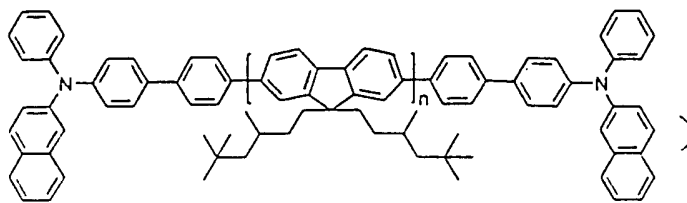
wherein $R_4 - R_7$ and $R_1 - R_3$ are as previously defined.

9. A polyfluorene according to any of the foregoing claims cross-linked to a polyfluorene according to any of the foregoing claims via at least one linkage selected from the group comprising a 9,9-spirobifluorene-linkage, a bifluorenyl-linkage, a bifluorenylidene-linkage and an α,ω -difluorenylalkane-linkage with a length of the alkane spacer in the range from 1 – 20 C-atoms.
10. A polyfluorene according to any of the foregoing claims which has at least one color-tuning moiety incorporated into the main chain.
11. A polyfluorene according to claim 10, wherein the color-tuning moiety is selected from the group comprising thiophene, substituted thiophene, phenyl, substituted phenyl, phenanthrene, substituted phenanthrene, anthracene, substituted anthracene, any aromatic monomer that can be synthesized as a dibromo-substituted monomer, benzothiadiazole, substituted benzothiadiazole, perylene and substituted perylene.
12. A polyfluorene according to any of the foregoing claims, which is liquid-crystalline.
13. A polyfluorene according to claim 12, which is liquid-crystalline at or above 70°C.
14. A polyfluorene according to any of claims 1 - 11, which is amorphous.
15. A polyfluorene selected from the group comprising

10019205-050202



10016203.050202



wherein n is as previously defined.

16. A film incorporating a polyfluorene according to any of the foregoing claims.
17. A film according to claim 16 which is aligned.
18. A film according to any of claims 16 - 17, incorporating at least one other substance.
19. A film according to claim 18, in which said other substance is selected from the group comprising fluorescent dyes, hole-transporting moieties, electron-transporting moieties, ion-transporting moieties, phosphorescent dyes, nanoparticles, low molecular weight liquid-crystalline moieties, other liquid-crystalline and/or fluorescent and/or phosphorescent and/or charge-transporting polymers.
20. A film according to any of the claims 16 - 19, deposited on an alignment layer.
21. A film according to any of the claims 16 - 20 having a thickness ranging from 10 nm to 2 μm .
22. A device selected from the group comprising FETs, photovoltaic elements, LEDs and sensors, incorporating a polyfluorene according to any of claims 1 - 15.
23. A device according to claim 22 incorporating another polymer.

24. A device according to claim 23 wherein said polymer is a luminescent polymer.
25. A device selected from the group comprising FETs, photovoltaic elements, LEDs and sensors, incorporating a film according to any of claims 16 - 21.
26. Use of a polyfluorene according to any of claims 1 - 15 in a film.
27. Use according to claim 24, wherein the film is an emission layer.
28. Use of a polyfluorene according to any of claims 1 - 15 in a device selected from the group comprising FETs, photovoltaic elements, LEDs and sensors.
29. Use of a film according to any of claims 16 - 21 in a device selected from the group comprising FETs, photovoltaic elements, LEDs, and sensors.
30. Use of a device according to any of claims 22 - 25 in combination with a liquid-crystal display (LCD).

10015268-050202